ABSTRACT OF THE DISCLOSURE

It is an object of the present invention to provide a method for determining the power of a laser beam which can determine the recording power of the laser beam so that jitter of a reproduced signal obtained by reproducing data recorded in a data rewritable type optical recording medium can be controlled within a tolerance even when cross erasing of data occurs and that the reproduced signal having the highest level can be obtained.

The method for determining the power of a laser beam according to the present invention includes the steps of recording a first test signal in the data rewritable type optical recording medium while varying a level of the recording power of the laser beam, reproducing the first test signal recorded in the data rewritable type optical recording medium, measuring, for each of the levels of the recording power of the laser beam, an amplitude A0 of a reproduced signal obtained by reproducing the first test signal before the first test signal is influenced by cross erasing of data, an amplitude A1 and jitter J1 of a reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data and an amplitude As and jitter Js of a reproduced signal obtained by reproducing the first test signal after an influence of cross erasing of data on the first test signal was saturated, calculating a first parameter for each of the levels of the recording power of the laser beam as a function of the difference between the amplitude A0 of the reproduced signal obtained by reproducing the first test signal before the first test signal is influenced by cross erasing of data and the amplitude A1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data,

calculating a second parameter for each of the levels of the recording power of the laser beam as a function of the difference between the amplitude A1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data and the amplitude As of the reproduced signal obtained by reproducing the first test signal after the influence of cross erasing of data on the first test signal was saturated, calculating a third parameter for each of the levels of the recording power of the laser beam as a function of the difference between the jitter Js of the reproduced signal obtained by reproducing the first test signal after the influence of cross erasing of data on the first test signal was saturated and the jitter J1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data, obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance, thereby determining a critical parameter, recording a second test signal in the data rewritable type optical recording medium while varying a level of the recording power of the laser beam, judging whether or not signal characteristics of a reproduced signal obtained by reproducing the second test signal recorded in the data rewritable type optical recording medium satisfy reference conditions, measuring, for each of the levels of the recording power of the laser beam, when the signal characteristics of the reproduced signal obtained by reproducing the second test signal recorded in the data rewritable type optical recording medium satisfy the reference conditions, an amplitude AA0 of the reproduced signal obtained by reproducing the second test signal before the second test signal is influenced by cross erasing of data and an amplitude AA1 of the reproduced signal obtained by reproducing the second test signal after the first test signal was once

influenced by cross erasing of data, calculating a fourth parameter based on the amplitudes AA0 and AA1 of the reproduced signals obtained by reproducing the second test signals as a function of the difference between the amplitude AA0 of the reproduced signal obtained by reproducing the second test signal before the second test signal is influenced by cross erasing of data and the amplitude AA1 of the reproduced signal obtained by reproducing the second test signal after the first test signal was once influenced by cross erasing of data, comparing the critical parameter and the fourth parameter, and determining the recording power of the laser beam at which the fourth parameter was obtained as an optimum recording power when the fourth parameter is equal to or lower than the critical parameter.